

Organizational data

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Organizational Data

Stefan Liebig

Abstract

Organizational data describe central characteristics of organizations, their internal structures and processes as well as their behavior as corporate actors in different social and economic contexts. Firm and enterprise data are the most frequently used type of organizational data, but there is also a growing interest in data on schools, universities, and hospitals in the economic and social science research. In the last several years, there has been a substantial improvement in the accessibility and scientific usability of organizational data from official statistics. However, non-official organizational data produced within publicly funded research projects are practically impossible to obtain for secondary analyses. There is no documentation of the existing stock of non-official organizational data, and the methodological standards used for organizational research in Germany are low compared to the standards of international research. Against this background, it is recommended that efforts be focused on documenting and archiving the existing non-official organizational data for secondary analyses and on establishing higher methodological standards within this research field.

Keywords: firms, organizations, methods of organizational research, micro data, secondary analysis

1. Research Questions

The most common form of organizational data used in the economic and social research relates to firms as local production units, in which goods and services are produced, and to enterprises as the legal units of the private and public sector. The data describe central characteristics of these organizations, their internal structures and processes, as well as their behavior as corporate actors in different contexts. Besides these kinds of “classic” firm-level data, data referring to organizations within the educational system (nursery schools, schools and universities) have recently also attracted attention in Germany (Klieme 2008). This interest has arisen in the context of an increasing awareness that the structures and processes existing on the school level — demographic composition of the school, quality of the cooperation among staff members — are important for individual educational success. Furthermore, an ongoing differentiation is being observed on the level of individual organizations within the German educational system, making it more important, for example, which university a person graduated from.

Each of the different disciplines focus on describing and explaining different structures and processes of organizations and their actions. The organizational research (business administration, sociology, psychology) is preoccupied with the structural characteristics of firms (degree of centralization, formalization, and standardization), the internal forms of organisation of work, the design and practice of operational staff policy, the industrial relations or the reasons for growth and shrinking of firms. Moreover, organizational-level data offer the possibility to evaluate the effects of policy measures. In this case, the structural features of organizations and their behavior are the objects that are to be explained. The question here is how organizations react to changes in the legal, economic or social surroundings, in other words which effects specific changes in the social, economic and legal environment have on organizations. Vice versa firm level data can additionally be used for the explanation of other issues such as macro economic developments, job market dynamics, educational participation or the reproduction of social inequality. In this respect, external consequences of organizational behavior or their internal structures and their changes stand in the center of interest. In this context, organizations represent micro-level units that help to explain macro-level phenomena. Correspondingly, economic researchers have defined firm-level data thus far as micro-data. Important questions are, for instance, the consequences of

operative employment trends, apprenticeship and advanced training, productivity and investment in the different areas of interest to economic policy (see the chapter by J. Wagner). Topics of organization-centered education research are the relevant surroundings and arrangements of educational organizations, their composition with respect to their personnel (teachers) and clients (children, pupils, students), and the resulting effects on education performance, education participation, and social inequalities (cf. Klieme 2008, Garmoran et al. 2006, OECD 2005).

To answer these questions, information about organizations can be collected in two different ways: first, through primary data collection using reactive and non-reactive research methods. This can take the form of interviewing (reactive methods), in which information about the organization is gathered by persons inside or outside the organization using standardized (surveys) or non-standardized (case studies) questionnaires (Bryman 2000, Stablein 1999). In the framework of non-reactive methods, data on firm structures, processes and behavior can be collected by making use of documents provided by the organization itself or archives in which data about organizations are stored. Second, organizational data can be collected by gathering information that accompany administrative processes. These “process-produced” administrative data arise either within organizations, e.g., in personnel administrations (cf. Brüderl et al. 1993), or outside organizations, e.g., in social security and tax administrations (see the chapter by J. Wagner). Currently, the most frequently used organizational data in Germany are survey data, qualitative case studies, and “process-produced” administrative data.

One of the major findings of organizational research is that organizations are not well coordinated units that follow strict and coherent bureaucratic principles (cf. Preisdörfer 2002). A number of organizational scholars hold the view that the complexity and diversity of organizations can solely be represented adequately on the basis of case studies with the aid of qualitative survey methods. As a result, the organizational research has given rise to a multitude of qualitative case studies. The use of qualitative methods and the concentration on case studies has long been a distinctive feature of the German organizational research by international comparison (cf. Grunow 1995). Case studies do in fact have an important heuristic function in the research process, yet they entail some major problems: due to the small number of cases, they cannot provide any generalized statements; inter-subjective validation of the findings is impossible; and they can have only limited significance for social

and economic research, which is more oriented towards explaining and predicting phenomena (cf. Hauptmanns and Rogalski 1992). Accordingly, there is a need for quantitative firm-level data based on standardized survey methods that allow for utilization of econometric methods. At the same time, such datasets need to have a sufficiently large sample size: only on this basis can researchers conduct analyses on the level of economic sectors, sub-sectors, and regional units. Moreover, there is a need to adequately describe changes over time and to scrutinize causal explanatory models. Such questions can only be answered by analysing longitudinal data. This is why panel data have taken a central role in organization-related social and economic research since the 1990s (Heckman 2001, Wagner 2008). Regarding the collection and provision of quantitative data on economic organizations in Germany, the situation since the 1980s has been as follows: most of the data outside official statistics were acquired by analysing cross-sectional studies restricted to smaller, individual economic sectors, distinct types of enterprises, and single regions.¹ Only in the 1990s were a number of larger longitudinal firm-level datasets generated (e.g., the *NIFA-Panel*), which were then expanded to inter-sectoral and national scales (IAB establishment panel). Since that point, firm-level data from official statistics have been gradually made accessible to researchers (KVI 2001). However, only since 2001, with the creation of Data Research Centers, have these data found real application in the research. These conditions have not yet been achieved for data on organizations within the educational system (Stanat 2008).

Organizational data are only valuable for scientific purposes if data production is guided by methodological standards, and if the resulting findings can be reconstructed by other researchers and assessed on the basis of the data. The latter is only possible if data are made available in a broadly useable form. When it comes to methodological standards, most of the organizational research is concerned only with the quality of data analyses. But there is also the problem of data collection, which raises questions of survey methodology even in organizational research: the quality of data depends not only on the sample or the sampling procedures used, but also on the validity and reliability of the measures. In this respect one must ask: Who in the organization provides the information on what basis? And: Does a question measure the same phenomenon in different sectors, sub-sectors, or firms?

¹ The only exceptions are the surveys within the framework of official statistics, the process-produced data of the Establishment History Panel (Betriebs-Historik-Panel) of the former Federal Employment Agency (Bundesanstalt für Arbeit), as well as a few individual studies, such as the IFO Business Survey.

The plea for making organizational data available is confronted by a fundamental problem of the organizational research: with very little information, it is relatively easy to re-identify the firms and enterprises from which the data was collected (cf. Gottschalk 2002). Data collected on the basis of compulsory duty-of-disclosure by official statistics, however, can only be made accessible if re-identification is impossible (*BStatG §16*). This does not apply to firm-level data, which are generated through voluntary participation. Nevertheless, anonymity is needed in order to convince firms to participate. The protection of participants' confidentiality prevents non-anonymous use of the data by a third party. However, in the last years, new methods and techniques have been developed that allow anonymization of firm-level data without diminishing its worth for scientific research (Drechsler et al 2007, Rosemann 2006, chapter by J. Wagner).

2. Status Quo

The organizational data used in social and economic research can be subdivided into three different groups: (1) data from commercial providers, (2) survey or “process-produced” administrative data from official statistics, and (3) data collected by research institutions or individual researchers.

(1) Currently, commercial firm-level data are available solely as enterprise data. The two most important databanks in Germany are the *Hoppenstedt-Firmendatenbank* and the *Creditreform-Firmenprofile*. Both contain a limited number of details (e.g., form of organization, sales figures, number of employees over the past years, contacts on top management level) about the enterprises as legal units: therefore, they offer no information about the firms in terms of local units. Both suppliers exclude specific enterprise groups: *Creditreform*, for instance, rules out certain legal forms, *Hoppenstedt* excludes enterprises with an annual turnover below 1 million euros or with less than 20 employees. The information is based on entries in commercial registries or on the suppliers' own research, in which case the entry is voluntary. An additional commercial data set is *LexisNexis*, which collects information about enterprises thereby using different sources – *Hoppenstedt*, *Bundesanzeiger*, commercial registries, and press releases.

Besides the restricted information base for many scientific and applied questions, the problems of these data are that (1) data collection is not documented and not transparent, and

(2) the enterprises listed do not necessarily constitute the respective universe. The access to data for researchers, however, is quite good, as the suppliers have specific and less expensive offers for scientific purposes. In addition, databanks are made available as a standard part of many universities' research resources. Moreover there exist a range of other national, international, and comparative datasets on firm policies—also related to personnel policies—that are collected by private companies and consulting firms. They offer a broad range of information. However, unless some form of bilateral cooperation between researchers and individual data producers exists, the data are not made available for scientific use.

(2) Organizational data from official statistics are the firm and enterprise data collected by the Federal Statistical Office and the Statistical Offices of the Federal States (*Statistische Ämter des Bundes und der Länder*), the German Central Bank (*Bundesbank*) and the Federal Employment Agency (*Bundesagentur für Arbeit*). The data from the statistical offices are collected on legal order by surveys or are the result of administrative processes—e.g., reporting to the social security system or tax administration. The data are provided by the research centers of the Federal Statistical Office and the Statistical Offices of the Federal States via (1) public-use files with very restricted information, (2) scientific-use files, which are de facto anonymized², (3) teleprocessing and (4) on-site usage of the original data within the centers. The surveys are conducted separately for each economic sector, thereby producing different kinds of datasets that range from monthly figures and total surveys up to annual sample surveys (cf. in detail: Brandt et al. 2007, Kaiser and Wagner 2008). Data on individual economic sectors (producing industry, trade, hotel industry, service sector) are accessible in the same way as other cross-sector surveys on wages and tax statistics.

Besides the data from the statistical offices, the Federal Employment Agency offers two data sets: one of them is the IAB (*Institut für Arbeitsmarkt- und Berufsforschung*) establishment panel, which is an annual, voluntary survey that offers information on 16,000 firms since the year 1993 (in East Germany: 1996). Of all the available official statistics, the IAB establishment panel offers the broadest scope of information. Quite recently, the Establishment History Panel has also been made available. As a “process-produced” administrative dataset, it aggregates information on employees covered by the social security system in the period between 1975 and 2005 to the firm level, and creates a data stock with

2 De facto anonymous data contain information that can only be traced back to the participant with time-consuming and cost-intensive effort.

information on 1.5 to 2.5 million firms. Both data sets are accessible in the research center of the Federal Employment Agency for on-site use, and the establishment panel is also available via teleprocessing.

Due to the firms' legal duty of disclosure (which, however, does not apply to the IAB establishment panel), official organizational data are characterized by high participation rates — with even sensitive questions being answered thoroughly — and large sample sizes. This is why differentiated analyses are possible, even in small regional units. As most of the available micro-data on establishment and firms are longitudinal panel data, it is possible to analyse processes of change and to test causal explanatory models (Brandt et al. 2007).

Data documentation and data access have been considerably improved in the last few years. In this context the research project “De facto anonymisation of business microdata” (Lenz et al. 2006) has played a decisive role here, by developing solutions to the anonymization problem. The follow-up project “business panel data and de facto anonymisation“ sets the ground for the expansion of available data (scientific-use-files) through longitudinal panel data.

A central problem with organizational data from official statistics is that they only capture a small amount of information — mainly business and personnel statistics — which are useful for specific fields of research in economics and the social sciences. Moreover, some of the surveys are restricted to single economic sectors. One possibility to resolve this problem is the inter-linkage of different data sets via the business register (which has been officially permitted since 2005). This is currently being investigated in the project “Official firm-level data in Germany” (Konold 2007). The project “Combinated firm-level data for Germany” (*KombiFiD*, Bender et al. 2007) even goes a step further by working on the linkage of data from the statistical offices and the Federal Employment Agency — which, however, is not yet legally permitted (see the chapter by J. Wagner). One central problem that has not yet been addressed by the ongoing projects is the quality of data collection (e.g., the problem of measurement error).

Data on organizations in the educational system — e.g., childcare facilities, schools, universities, as well as advanced training facilities — are collected by the statistical offices, and are available on the micro level at the respective data research centers.

(3) Organizational data collected by research organizations or individual researchers generally have a smaller sample size. Since they are more strongly oriented towards substantive research questions, they contain more information than the official data. In this regard, they offer a necessary extension of the official data sources, and they build the basis for organization-related research focusing more on the description and explanation of an organizational strategy, internal processes, industrial relations, etc. The relevant literature in this disciplines shows that there exist a multitude of quantitative and qualitative (and in most cases cross-sectional) organizational studies, financed by public and private research organizations (e.g., DFG, BMBF, *VolkswagenStiftung*, *Hans-Böckler-Stiftung*, *Thyssen-Stiftung*). However, in contrast to the official statistics, the existing data stock is not documented and the data are not available for secondary analyses³. Exemptions are only the data from Ifo Institute for Economic Research (Ifo Business Survey, Becker and Wohlrabe 2008), ZEW (Center for European Economic Research) in Mannheim (data sets on innovation, business trends and the middle classes), NIFA panel (Widmaier 2000) as well as the longitudinal firm-level data that were collected since 2001 in the framework of *Sonderforschungsbereich 580* (SFB580-A2 manager survey and SFB580-B2 establishment panel, Krause and Martens 2008). Currently, only the NIFA panel is incorporated into the data catalog of the Central Archive of German Social Science Infrastructure Service (GESIS-ZA), Cologne. German firm and establishment data on working time and work-life balance are available as part of an international comparative survey conducted by the European Foundation for the Improvement of Living and Working Conditions (Eurofound). The data are archived and accessible at the Economic and Social Data Service ESDS, UK.

One of the main reasons for the inadequate availability of organizational data for secondary analysis might be the problem of re-identification. This is especially true for qualitative organizational data. But it seems that researchers within the field of organizations have not yet noticed the progress regarding anonymization methods of firm-level data made by the above-mentioned projects.⁴

Closely connected to restricted usage and lack of data documentation are central methodological deficits, which are visible in many research articles dealing with organizational data. First, in most of the cases publications relying on organizational data do

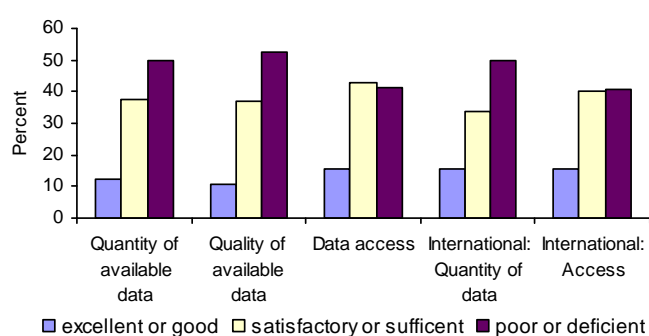
3 According to the author's own research, even the funding institutions do not have detailed information about previously collected data and their availability.

4 The qualitative interview data that were collected in *Sonderforschungsbereich 580* are an exception.

not offer any methodological explanations regarding sample quality or data collection. In addition, the organizational data lack a well-documented, standard methodological set of measurement instruments such as those common in the survey research, where there exist Demographic Standards (Statistisches Bundesamt 2004) and the ZUMA scale handbook (Glöckner-Rist 2007). A strong need therefore exists to establish internationally comparable methodological standards and also for more research on organizational survey methodology, which concentrate on data collection methods, measurement errors, sampling and unit- or item-non-response problems.

The deficits in supply, methodological quality, and access — also in international comparison — have been articulated in an online survey among organizational researchers, which was conducted by the author and Alexia Meyermann in summer 2008. In this online survey, 50 percent of the participants assessed the data supply and the quality of content and methods as inadequate or insufficient. Forty percent criticized data access. A similar pattern can be found when looking at the numbers of participants who appraised the quantity of data and the access in international comparison. Overall, the researchers surveyed called for an improvement of the research situation. Seventy-four percent of the researchers were prepared to make their data available for secondary analyses, but had not delivered them to a data archive so far due to the anonymization problem.

Figure: Results from an Expert Online Survey in Germany 2008.⁵



Notes: Relative Frequencies, Online Survey August/September 2008, N = 40.

5 The online survey was conducted by Stefan Liebig and Alexia Meyermann. A call for participation was sent via mailing lists to different sections of the German Sociological Association (Sociology of Work and Industrial Sociology, Economic Sociology), to the research group on empirical personnel and organizational research (Arbeitskreis Empirische Personal- und Organisationsforschung) and to the German Industrial Relations Association (GIRA) in August/September 2008. The survey homepage was visited by 121 people, of whom 40 completed the survey.

3. Future Development

The future development of organizational research is characterized by an increasing demand for international comparative and longitudinal studies. This will be the only way to identify causal effects of the organizational level on macro-phenomena and vice versa. Especially under the conditions of an ongoing process of globalization, we will need this kind of data to study the relationship between macro-level economic processes and the behavior of organizations as corporate actors and their internal structures. Furthermore, European unification makes it necessary to broaden the narrow national perspective of organizational research. As the institutional conditions on the member state level are adjusted, we will need to investigate the accompanying restrictions and challenges for different organizations. For such international comparative and longitudinal organizational research, the implementation of methodological standards is necessary. At the same time, a broad base of information is decisive for the individual disciplines and for the evaluation of different policy measures. In the face of demographic changes and the debates on the work-life balance, not only personnel and business figures will be of interest but also the strategies and programs that are not covered by official statistics. Given the much higher obstacles to international comparative and standardized surveys, this will require the collection of non-official, comparative longitudinal organizational data. At the same time, the differentiation of the German educational system — which is affecting all levels — will increase the demand for a more detailed description of the internal structures and processes of nursery schools, schools, and universities (Klieme 2008).

All in all, the present progress in the field of official organizational data is positive. The improvements in data supply and data access are leading in the right direction. Further linkages among individual datasets and improved access — e.g. through remote access — have already been examined in different projects (see the chapter by J. Wagner). Furthermore, it will be essential not only to improve linkages within the official statistics, but to apply this same approach to the publicly and privately financed organizational surveys as well. While the official statistics offer exact longitudinal information on “hard” personnel and business figures, the advantage of non-official surveys can be seen in their thematic amplitude. Non-official organizational surveys can benefit from such linkages, since they do not bear the burden of data collection but can instead focus on specific research questions; initial efforts in this field are already underway (for more on this issue, see Reimer and Künster 2004).

However, the enhancement of the organizational data infrastructure in Germany will also lead to another, perhaps less obvious problem: for the production and use of organizational data, specific competencies are required that are only taught in academia to very low degree at present. Although organizational research also relies on the methods and techniques of general empirical social research, standardized organizational surveys pose specific challenges with regard to methodological issues. These include questions of how to draw the sample, develop the sampling instruments, and collect the data, and require knowledge of the respective statistical techniques. This implies that data producers should increasingly offer campus files for scientific education. Moreover, methodological training in organizational research should be professionalized and intensified.

4. Recommendations

Against this background, the following recommendations for improving the existing infrastructure of organizational data can be given:

1. Documentation on existing non-official organizational data should be made easy accessible to interested researchers and enriched with detailed methodological information—at least including the publicly-funded data of the German Research Foundation, the Federal Ministry of Education and Research, the Max Planck Society and the Leibniz Association.
2. Data producers from universities and publicly financed research institutes should be obliged to make the data they collect available for research. As with the social data on persons and households, these data should be centrally archived. This should be done not only for quantitative data but also for qualitative organizational data (e.g., it is currently done in Sonderforschungsbereich 580) as is the case within the Economic and Social Data Service (ESDS), UK.
3. Research on organizational survey methods is urgently needed, as is enhanced academic training within the field of survey methods for organizational research.
4. A network of projects should be established that deals with the implications of data protection laws, practical solutions to the linkage of official and non-official organizational data, and the promotion of analogous policy measures.
5. The useable official statistics on organizational microdata should be enriched to include data on the educational system.

6. In addition to existing research data centers (*Forschungsdatenzentren*) a specific data service center (*Datenservicezentrum*) on firm- and organizational data should be established. The task of such a center should not only be to document the existing data on organizations in Germany and archiving the data from non-official producers but also to offer expertise and service for researchers who are planning organizational studies and want to provide their data for secondary analyses. Such a center should work on developing solutions for the anonymization of quantitative and qualitative organizational survey data and boosting the establishment of and adherence to methodological standards in order to improve the quality of organizational data in Germany. Only by creating a center that is responsible for documenting, archiving and providing a broad range of methodological services can the gap be closed between German organizational research and the international standards and infrastructures that exist in other countries (e.g., the Data Archive in UK).

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